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Scholarships by Merit

IN these short articles discussion of topics of purely veterinary interest is customary; but no excuse is needed for a passing reference to a subject which must, over the post-war years, have given anxiety to a large body of our readers. We refer to that form of educational means test which is applied against the sons and daughters of professional men.

Few people will dissent from the principle that university education should be within the reach of every ambitious young man and woman without regard to financial consideration; merit, and the ability to benefit from such education are the only proper criteria. But in these days, to have a father capable of earning anything above the income of an artisan seems to be a positive drawback to the student. He or she may win, on merit, an award worth hundreds of pounds, only to see it whittled away in proportion to the father's gross—not net—income, perhaps to a pittance. The parent, in his turn, has the chagrin of contributing substantially during a period of three, four, five or even more years to the cost of his children's university fees; while his neighbour—who may not be so much worse off once tax has been deducted from the professional man's earnings—enjoys to the full the financial relief provided by the State.

Nor is it only the parent who has reason for disillusion. The spectacle of injustice meted out to him is not lost upon his children. They can scarcely find incentive in the knowledge that the reward of graduation and of personal effort is to be discriminated against at the finish.

Even taking into account the vast increases in the cost of living, social life in most universities is less expensive than it was two or three decades ago. Nevertheless it is lamentable if students from professional homes are hard-pressed for an adequate personal allowance. Such students, having been mulcted of much of the scholarship income which should properly have been theirs, find their over-burdened parents at their wits' end to provide for them in addition to other children.

It may be suggested that, ideally, if a young man or woman is capable of winning an educational award it should be retained as the recognition of individual merit, notwithstanding the father's income or position. Failing this, as an act of ordinary justice, any means test there may be should have consideration of income remaining after the payment of tax—not before it.

A Survey of Animal Mycoses in Britain : General Aspects

BY

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Introduction

BECAUSE the prevalence and economic importance of mycoses of animals in this country was uncertain, the Agricultural Research Council decided in 1951 to sponsor a Survey of the fungi associated with disease in farm animals. Arrangements were, therefore, made for the mycological examination in the Department of Botany, University College, Exeter, of material collected by veterinary officers during the two-year period January 1st, 1952, to December 31st, 1953. Most of the material was collected by the Veterinary Investigation Officers at the 16 Veterinary Investigation Centres in England and Wales, the Veterinary Investigation Departments in Scotland and the University veterinary schools. During the second year, as the result of an appeal in THE VETERINARY RECORD (Vol. 64, pp. 827-828, 1952), additional material was received from a number of veterinary practitioners and other interested workers.

Before considering the results in detail it should perhaps be emphasised that the Survey had a strong mycological bias. The primary objective was to identify the fungi found associated with pathological conditions and obtain data on their incidence and distribution.

During recent years it has become increasingly clear that a number, if not most, of the fungi which cause disease in animals and man are only incidentally pathogenic. They are normally saprophytic in the soil or some other component of the animals' environment. Farms are notoriously dusty and the number of fungus spores in the air of farm buildings may be many times that of the outside air. Both farm animals and farm workers are thus exposed to a hazard of infection which, from the aspect of human medicine, is reflected in the higher incidence of a number of mycoses among agricultural workers than in urban populations. One aspect of the Survey was, therefore, an attempt to set the fungi poten-

TABLE I

SUMMARY OF SPECIMENS RECEIVED DURING THE SURVEY

Animal	Respiratory system		Digestive system		Excretory system	Nervous system	Skin and hair			Reproductive system			Mastitis milk	Totals
	Aspergillosis (*A. fumigatus*)	Other disorders	Moniliasis	Alimentary canal and faeces			Ringworm +	Ringworm —	Other conditions	Mycotic abortion	Male and female organs	Eggs		
Cattle ...	—	18	1?	20	4	3	41	30	—	51	21	—	78	267
Horse ...	—	1	—	1	—	—	8	5	—	—	1	—	—	16
Pig ...	—	10	—	8	1	—	—	—	8	—	—	—	—	27
Sheep ...	—	3	—	2	—	—	—	—	3	1	—	—	—	9
Goat ...	—	—	—	—	—	—	—	—	—	—	—	—	1	1
Dog ...	—	2	1?	—	—	—	12	31	3	—	—	—	—	49
Cat ...	—	—	—	—	—	—	19	17	2	—	—	—	—	38
Rabbit ...	—	2	—	—	—	—	—	—	—	—	—	—	—	2
Guinea-pig	1	—	—	2	—	—	—	—	—	—	—	—	—	3
Mink ...	—	1	—	—	—	—	—	—	—	—	—	—	—	1
Mole ...	—	1	—	—	—	—	—	—	—	—	—	—	—	1
Fowl ...	60	57*	11	4	—	—	—	—	7	—	1	1	—	141
Duck ...	8	1	—	2	—	1	—	—	1	—	—	1	—	14
Goose ...	7	—	—	—	—	—	—	—	—	—	—	1	—	8
Turkey ...	19	6	12	5	—	1	—	—	1	—	—	—	—	44
Pigeon ...	—	1	1	—	—	—	—	—	—	—	—	—	—	2
Parrot ...	3	2	1?	—	—	—	—	—	—	—	—	—	—	6
Budgerigar	1	—	—	—	—	—	—	—	—	—	—	—	—	1
Jackdaw ...	1	1	—	—	—	—	—	—	—	—	—	—	—	2
Partridge ...	—	1	—	—	—	—	—	—	—	—	—	—	—	1
Rook ...	1	—	—	—	—	—	—	—	—	—	—	—	—	1
Wood-pigeon	4	—	—	—	—	—	—	—	—	—	—	—	—	4
Totals ...	105	107	27	44	5	5	80	83	25	52	23	3	79	638
	212		71				188			78				
Hay and fodder samples														19
														657

* Including 27 samples from poultry dying from non-mycotic conditions.

†Now at the Veterinary Laboratory, Weybridge, Surrey.

tially pathogenic for animals in perspective against the fungus flora of animals as a whole. Clinical aspects were not, however, neglected. Case histories were recorded as completely as possible and a decision as to the implication of a fungus in a doubtful case was only reached after discussion or correspondence with the veterinary officer in touch with the case.

Finally, it should be mentioned that facilities were not available for making pathogenicity tests so that evidence for pathogenicity is almost always circumstantial.

The data obtained during the Survey have been classified and will be preserved for reference. The following general account of the results is being supplemented by a paper on mycological aspects which will be published in the *Transactions of the British Mycological Society*.

Number and Source of the Specimens

The samples received for mycological examination comprised 392 cultures (either primary cultures or sub-cultures made at the Veterinary Investigation Centres), 262 specimens of morbid tissues, and 19 samples of hay and fodder. From this material, representing nearly 700 cases of mycotic or suspected mycotic infection, 1,204 isolates of fungi were identified and classified in 125 species. Twenty-five of the species were considered to be pathogenic or potentially pathogenic and to be causally involved in approximately 300 cases. The material examined is summarised in Table I on a case basis according to the animals affected and the sites involved. In this general account of the Survey, the well-established mycoses are discussed first, followed by a consideration of those conditions in which the status of fungi is uncertain.

Ringworm

Although ringworm is still the best known mycosis of animals, only approximately one quarter of all the specimens received during the Survey were from cases of ringworm or suspected ringworm and for only half of these was infection by a dermatophyte confirmed by laboratory examination. It can be seen from Table II that in the 79 cases of ringworm confirmed by laboratory examination, five species of dermatophytes were responsible for the infection of four hosts (cattle, horse, cat, and dog).

Table III indicates the relation of clinical to laboratory diagnosis for all cases submitted as ringworm or suspected ringworm and shows that the percentage of cases in which a clinical diagnosis was confirmed by laboratory examination varied from 28 per cent. in dogs to 58 per cent. in horses. The reasons for the frequent failure to confirm the clinical diagnosis are not altogether clear. It is possible that laboratory examination has on occasion been insufficiently thorough to detect the dermatophyte in a lightly infected specimen, but this is thought to have occurred infrequently. More probably the sampling of affected animals has at times been at fault for it is notoriously difficult to select *Microsporum*-infected hairs from even a heavily infected cat without the help of a Wood's lamp and it can also be difficult to obtain an infected sample from a large animal. After allowing for these two possibilities, a number of unexplained cases remain from which it appears that there are certain conditions liable to be clinically mistaken for ringworm. This emphasises the need to supplement a clinical diagnosis of ringworm by laboratory examination, which in addition to confirming ringworm can also, by identifying the dermatophyte involved, supply information which should eventually provide guidance for the more rational therapy of animal ringworm, as has already been done for human dermatophyte infections.

TABLE III

RELATION OF CLINICAL TO LABORATORY DIAGNOSIS OF RINGWORM

	Number of cases			Percentage cases clinically + and microscopically + and/or culturally +
	Clinically +	Microscopically +	Culturally +	
Cattle	71	41	36	57·8
Horse	12	6	6	58·3
Cat ...	36	18	18	53·0
Dog...	43*	11	10	28·0

* Including five cases of *Dermodex* infection diagnosed clinically as ringworm.

Cattle Ringworm. Ringworm of cattle is of common and widespread occurrence and accounted for half the confirmed ringworm samples. All the dermatophyte isolates were classified as one species, the faviform trichophyton described by Sabouraud as *Trichophyton discoides* but perhaps better classified as *T. verrucosum* var. *discoides*. *T. mentagrophytes*, which has been occasionally recorded from cattle in Britain, was not met with during the Survey and this is in line with the prevailing view that *T. mentagrophytes* rarely attacks cattle in this country.

The cattle ringworm fungus is difficult to isolate from bovine material. Its nutritional requirements are somewhat exacting and it is slow growing, becoming easily overgrown in culture by many of the

TABLE II

SUMMARY OF CONFIRMED CASES OF RINGWORM IN CATTLE, HORSES, CATS AND DOGS

Host	Number of cases	Dermatophyte				
		Microsporum canis	*M. equinum*	*Trichophyton mentagrophytes*	*T. discoides*	*T. equinum*
Cattle ...	41	0	0	0	41	0
Horse ...	7	0	1	0	1	5
Cat ...	19	17	0	2	0	0
Dog ...	12	6	0	6	0	0

saprophytic moulds always associated with the skin of cattle. A method developed during the Survey for the isolation of this fungus which gave consistently good results for more than a year was published in THE VETERINARY RECORD (Austwick, 1954).

It is often said that cattle ringworm is most frequent in young animals and that it is characteristically a disease of housed stock which clears up when the animals are turned out to grass. The data, admittedly very limited, obtained during the Survey lend little support to these views. The incidence of the condition, as measured by the monthly totals of samples received, shows no seasonal variation (Fig. 2) and for cases for which data were available, calves were involved in 17; adult animals in 26. There were several cases in which cattle ringworm recurred in association with a particular calf shed or was persistent on a particular farm, and also reports that the disease occurred annually in young housed stock. On the other hand there was a report that one-and-a-half to two-and-a-half-year-old bullocks showed a flare-up of ringworm at grass during August in successive years and one of ringworm in calves and adults both housed and at pasture. The evidence, while only suggestive, does nothing to contradict the view that the epidemiology of cattle ringworm is still very obscure.

Horse Ringworm. The most interesting cases of ringworm of the horse were those noted during an outbreak caused by *Trichophyton equinum* in a number of riding stables in the Reading area during the late summer and early autumn of 1953. The condition was popularly diagnosed as "Canadian Horse Pox" and probably originated from an infected animal brought to one of the stables from outside the area. The spread of infection from one stable to another was evidently rapid, and the incubation period appeared to be about three weeks. The lesions, which were considered to be atypical of ringworm, occurred chiefly in the saddle and girth regions, developing from small inflamed swellings with some exudation, into circumscribed areas with scab formation and resultant loss of hair. The animals appeared to be in considerable discomfort and could not be used for riding for several weeks. Reports suggested that various treatments were ineffective (the dermatophyte was successfully isolated from three horses eight weeks after the commencement of treatment) and that the disease ran its normal course.

Microsporum equinum and *Trichophyton discoides* were each isolated once from horses. The second fungus was cultured from a ringworm specimen which was microscopically negative but the horse had been grazing with heavily infected cattle and the record is believed to be the first of *T. discoides* from the horse in Britain.

Cat and Dog Ringworm. Table II shows that *Microsporum canis* occurred more frequently in cats than in dogs (17:6) but that *Trichophyton mentagrophytes* was recorded more often from dogs than cats (6:2). It is also of interest to note that the incidence of cat and dog ringworm shows a seasonal peak, which is believed to be significant, during the

Figs. 1-3.—Seasonal incidence of Ringworm

FIG. 1.—All types of ringworm.

FIG. 2.—Cattle ringworm.

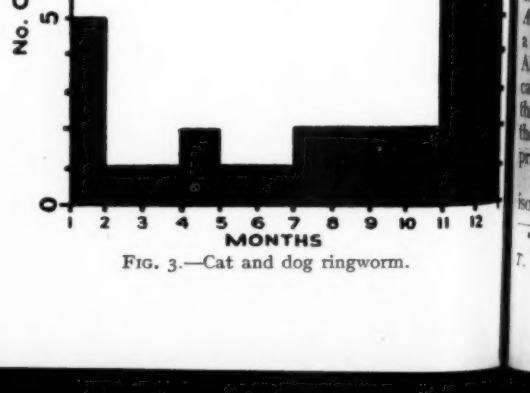

FIG. 3.—Cat and dog ringworm.

winter months (Nov. to Jan.) (Fig. 3). Several instances of the transmission of the infection from cats and dogs to man were recorded.

Fowl Favus. Fowl favus caused by *Trichophyton gallinae* was at one time apparently common in this country. Although this condition was watched for during the Survey, no case was noted. During the past six years a number of fowls' heads have been received from Mr. J. D. Blaxland of the Veterinary Laboratory at Weybridge and from other correspondents as suspected favus, but none (including the seven specimens examined during the Survey) showed the heavy crusting of classical favus in fowls and in no case was a dermatophyte or other pathogenic fungus detected.* It thus appears that there is a condition of unknown aetiology which shows some clinical resemblance to mild fowl favus.

Other Skin Conditions

Among a number of specimens from disorders of the skin of uncertain aetiology, mention may be made of three cases of miliary eczema in cats and five of a mange-like condition in pigs, in none of which did fungi appear to be a likely causal agent.

Avian Aspergillosis

The fungus most frequently isolated during the Survey was *Aspergillus fumigatus*. This common and ubiquitous mould of soil and compost is normally a saprophyte and as such is a frequent contaminant of cultures from animal sources. It is, however, also well known as a virulent primary pathogen and during the Survey it has been implicated both in certain conditions dealt with later in this article (*e.g.* bovine mycotic abortion) and in avian aspergillosis, of which it is the classical causal agent.

The occurrence of aspergillosis of poultry and other birds has been recorded in this country for more than a century and avian aspergillosis is probably the mycosis of animals most frequently correctly diagnosed. The gross *post-mortem* signs are characteristic and the pathogen is easy to isolate and identify.

The cases of avian aspergillosis caused by *Aspergillus fumigatus* are summarised in Table IV which shows that aspergillosis was confirmed by laboratory examination in more than 75 per cent. of the 139 suspected cases, and a number of the unconfirmed cases were most probably of this disease.

In addition to the cases caused by *Aspergillus fumigatus*, aspergillosis caused by *A. flavus* in a tumbler pigeon and a turkey, and by *A. niger* in a fowl was recorded, and *A. nidulans* was isolated from each of four chicks examined from one epizootic. *A. niger*, though it has been previously claimed as a cause of avian aspergillosis, was not recorded by Ainsworth & Rewell (1949) in their long series of cases from the London Zoo. The bird involved in the present case was very extensively infected and the circumstantial evidence that *A. niger* was the primary pathogen was very convincing.

A. fumigatus was very frequently the only fungus isolated from morbid material. For example, 35 of

*Since the Survey, Mr. Blaxland has recorded a case of *T. gallinae* in fowls.

Figs. 4-6.
Seasonal incidence of Avian Aspergillosis

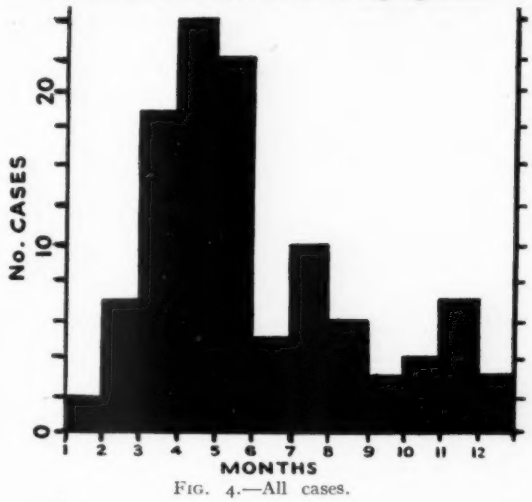

FIG. 4.—All cases.

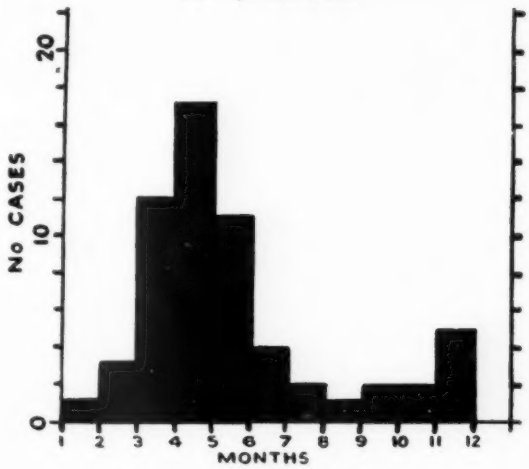

FIG. 5.—Aspergillosis in fowls.

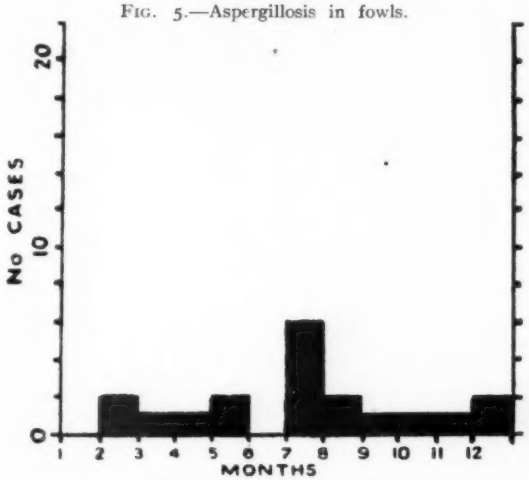

FIG. 6.—Aspergillosis in turkeys.

59 cases in fowls (59.3 per cent.) yielded only *A. fumigatus*, and the corresponding figures for turkeys were 12 of 19 (63.3 per cent.).

Aspergillosis is generally recognised to be characteristically a disease of domesticated and captive birds and the view has been expressed that the condition is unknown among wild birds. During the Survey, however, the disease was recorded in a rook, a jackdaw, and four wood-pigeons.

TABLE IV

NUMBER OF CASES OF AVIAN ASPERGILLOSIS

Bird	Cases submitted as aspergillosis or suspected aspergillosis		Lungs of birds dying from other causes
	Confirmed by laboratory examination	Not confirmed by laboratory examination	
Fowl	62	24	25
Turkey ...	19	6	2
Ducks and geese	12	1	
Other birds ...	14	2	
Eggs	2	0	
Total ...	109	33	
	Total 142		

Distribution of Lesions. The distribution of the lesions in 85 cases of avian aspergillosis is summarised in Table V. These data show that the disease is characteristically pulmonary. In only one case, a fowl with a heavy growth of *A. fumigatus* over the kidney and ovary, was the respiratory system apparently unaffected.

TABLE V

AVIAN ASPERGILLOSIS. DISTRIBUTION OF LESIONS

	Number of cases	Percentage of cases involving				
		Lungs	Trachea	Air sacs	Viscera	Central nervous system
Fowl ...	57	89·5	8·8	22·8	8·8	0
Turkey ...	17	88·4	5·9	46·1	11·8	5·9
Ducks and geese ...	11	91·1	0	27·3	9·1	0
Total ...	85	89·6	7·1	30·6	9·4	1·2

Death Rate. No data are available for the death rate among infected birds but the prognosis is grave because no useful treatment is available and the mortality rate is high.

The case histories were usually incomplete but in eight epizootics involving 2,608 birds, 328 birds (*i.e.* 13.5 per cent.) were stated to have died, the death rate in the different outbreaks varying from 5 to 87.5 per cent.

Age and Seasonal Incidence. Fig. 4 shows avian aspergillosis, unlike ringworm (Fig. 1), as judged by the numbers of specimens received, to exhibit an annual peak. For fowls the incidence was highest in March to May (Fig. 5), for ducks and geese May, and for turkeys July (Fig. 6). Table VI emphasises

TABLE VI

RELATION OF AGE OF BIRD TO INCIDENCE OF ASPERGILLOSIS

Bird	Number of cases	Percentage of cases in birds	
		Under 1 month	Over 1 month
Fowl ...	46	67·5	32·5
		Poults	Adults
Turkey	17	76·5	23·5

the greater susceptibility of young birds, a fact that would perhaps account for the variation in seasonal incidence. Most epizootics occur in the spring among chicks, while at other times of year the outbreaks tend to be more sporadic and among older birds in which the disease is often chronic.

Litter Samples Associated with Aspergillosis Outbreaks. Outbreaks of aspergillosis are often attributed to the use of mouldy feeding stuffs or litter, and five cultures or samples from these materials were examined for the presence of *A. fumigatus* in attempts to locate the source of infection. This pathogen was found in two samples.

Aspergillosis in Guinea-Pigs

Two cases of aspergillosis in guinea-pigs were reported from the Public Health Laboratory, Manchester. In both animals the lungs showed nodular lesions, and the spleen and mesenteric glands were enlarged. Hyphae were seen in most of the affected organs and *Aspergillus fumigatus* was isolated from the lungs. Environmental conditions were good but *A. fumigatus* was isolated from the hay used for bedding.

Mucormycosis of Guinea-Pigs

Another well-defined and apparently hitherto undescribed mycosis of guinea-pigs is mucormycosis caused by *Absidia corymbifera* and *A. ramosa*.

This disease was reported during 1952 from the Ministry of Supply's Animal Farm at Porton, Wilts., where it was discovered among the stock herd in the course of routine abdominal palpations for the detection of early pseudotuberculosis (*Pasteurella pseudotuberculosis*). When the enlarged mesenteric lymph glands showing typical pseudotubercular lesions from several newly weaned guinea-pigs were plated on nutrient agar, no bacteria appeared and the only growth was either *Absidia corymbifera* or *A. ramosa*.

Following a visit to Porton at the invitation of the Superintendent, Dr. J. S. Paterson, extensive isolations were made from two affected animals and from the hay and dried grass pellets on which they had been feeding. Subsequently a number of cultures from various organs were received and two further hay samples were examined for the presence of the two species of *Absidia*. These investigations revealed the occurrence of both species in the kidneys, spleen and lungs in addition to the mesenteric glands and also in the hay samples and on the hair of the animals.

The disease is usually benign and after the age of six weeks, only scar tissue remains on the affected

glands, but occasional cases have been found in older animals and some appear to have been fatal. One outbreak in early 1954 occurred after the feeding of an apparently first-class batch of new hay, and was accompanied by diarrhoea, enteritis and typhlitis. Both *Absidia* species appeared in quantity in cultures from the hay and intestinal contents.

A detailed account of this disease is being prepared for publication by Dr. Paterson.

Avian Moniliasis

Attention has recently been drawn to avian moniliasis caused by *Candida albicans* in Britain by Blaxland & Fincham (1951) who recorded a series of epizootic outbreaks in young turkeys. No spectacular outbreaks were encountered during the Survey but in July, 1953 a series of minor epizootics occurred in turkey poults in Oxon., Bucks., and Worcs.

The 24 confirmed cases of avian moniliasis recorded were distributed as follows: fowls, 11; turkeys, 12; pigeon squab, 1.

In addition, an isolate of *C. albicans* was obtained from the sternum of a parrot and three cases of suspected moniliasis in turkeys yielded *Candida guilliermondii*, *Torulopsis* sp. and *C. krusei*, respectively. The significance of these yeasts was uncertain, and the last case was possibly one of vitamin A deficiency.

Age and Seasonal Incidence. Avian moniliasis appears to show a well-marked seasonal incidence (Fig. 7). Most cases in fowls occurred in March (Fig. 8), while for turkeys the peak was in July (Fig. 9). This pattern, as for aspergillosis, seems to be related to the susceptibility of birds of different ages. All the turkeys affected were poults and, with the exception of an 18-month-old bird, all the fowl cases were in young birds aged between six weeks and 11 months. These data suggest that young birds are more susceptible than older birds.

Death Rate. In four outbreaks involving 151 chickens there were 16 deaths (10.6 per cent.); the death rate in the four outbreaks varying from 5.1 to 33.3 per cent. In three outbreaks involving 340 turkey poults there were 55 deaths (10.6 per cent.; range 0.5 to 75 per cent.).

In addition to these records of avian moniliasis, *Candida albicans* was isolated from one of two cases of vent gleet in ducks and from cases of intestinal inflammation in a cow and in a six-month-old Boxer dog. The last case occurred after antibiotic treatment and the intestinal disturbance was accompanied by loss of weight, high temperature and oedema of the lungs.

Bovine Mycotic Abortion

The occurrence of a fungus associated with an unexplained case of bovine abortion was first noted by Theobald Smith (1920) and subsequent reports of the condition have been made by Plum (1932) and Jungherr (1935), both referring to *Aspergillus fumigatus* as the chief mould involved. In this country only Rollinson & Haq (1948) appear to have noted the occurrence of abortion in association with a fungus (*Absidia corymbifera*), which, however, was isolated only from genital mucosae and not from

Figs. 7-9.—Seasonal incidence of Avian Moniliasis

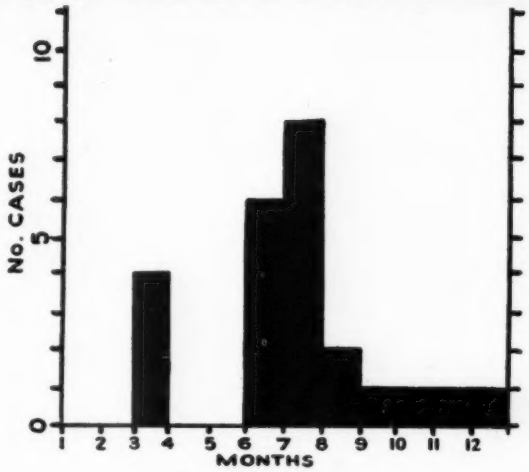

FIG. 7.—All cases

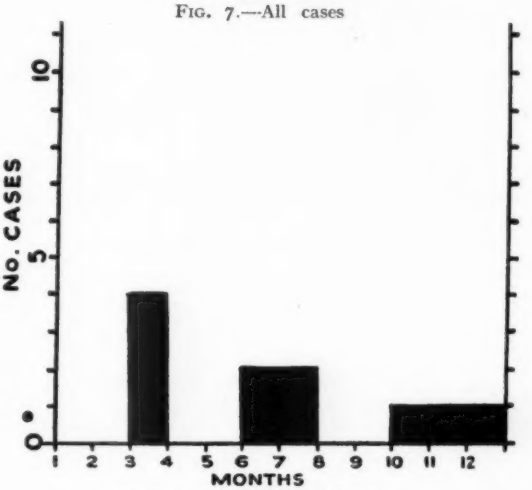

FIG. 8.—Moniliasis in fowls.

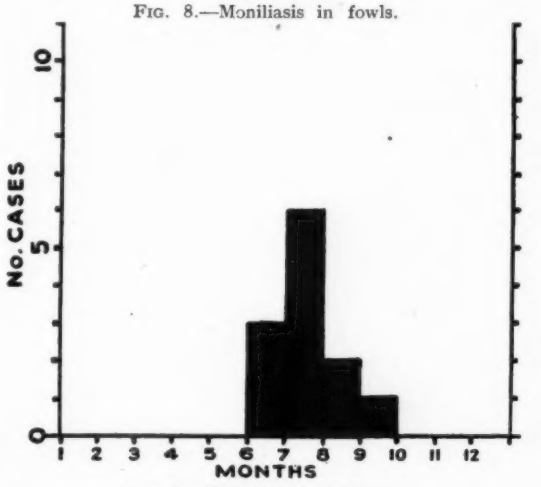

FIG. 9.—Moniliasis in turkeys.

the aborted foetuses. The Survey records suggest that although uncommon, mycotic abortion is a widespread condition which may have some importance in sterility troubles.

The specimens received from 51 cases were chiefly isolations from foetal stomach contents. Sixteen of the isolates were reported as the only organisms growing on the isolation plates and in only two cases was *Brucella abortus* infection suspected. Seven samples were not considered representative of the condition, on the grounds of gross contamination. In the 44 accepted cases only seven species were recorded, all more than once, compared with some nine single records of other species from the contaminated samples.

Occurrence of Lesions. Hyphae were stated to have been observed in 10 samples of stomach contents, but were not apparently associated with lesions in that organ. In two cases necrotic placentitis was reported and material from one of these showed extensive invasion of the chorionic villi by hyphae of *A. fumigatus*. In two other cases encrusting skin lesions were observed, but it seems certain that this type of abortion may occur without any external lesions on the foetus. Moreover, no reports of ill effects to the dam were received.

Foetus Age and Seasonal Incidence. An attempt to ascertain whether these abortions occur at a particular term in pregnancy as suggested by several authors, was handicapped by the lack of adequate data. In the 16 detailed histories available, the range of foetus age was two to eight months (average 5.7), with a peak at four months. Thus there did not seem to be a tendency for abortion to occur in the last two months of pregnancy as described by Plum (1932).

The condition appears to show a significant seasonal incidence; 72.3 per cent. of the cases were received during December to May, and 27.7 per cent. during June to November. This may possibly reflect the increased concentration of fungus spores in the environment due to the feeding of hay and other dried foods, and hence the increased chances of infection.

Insufficient data are available to compare the incidence among cows served normally and those artificially inseminated, but a small number of cases from the latter animals was reported. Similarly no comparison can be drawn between S.19 vaccinated and unvaccinated cows but the former were represented.

Previous histories of unexplained abortion were noted in six cases and this may indicate a tendency for mycotic abortion to recur in a herd, for on one farm four abortions of this type had occurred within three years and on another, five had occurred in S.19 vaccinated animals. Three cases were of twin calves, one with one live calf and the other mycotically infected, and another with both calves dead but only one with the hyphae of *A. fumigatus* in the stomach contents.

One case of ovine abortion, in which *A. fumigatus* and *A. terreus* were isolated from the heart, liver and lungs of the foetus, was also recorded.

Mycology. Forty-one cases yielded one fungus only and in these 63 per cent. of the isolates were *Aspergillus fumigatus*. Next in order among the single isolates was *Absidia ramosa* (12.1 per cent.), with the other species in much smaller numbers. Of the fungi isolated from these abortions *Aspergillus fumigatus*, *Absidia ramosa*, and *A. corymbifera* are recognised pathogens, whilst *Aspergillus terreus* and *A. nidulans* may be regarded with suspicion.

Isolations from Bovine Reproductive Organs

In addition to the cases of mycotic abortion described above, further evidence of the occurrence of fungi in both the male and female reproductive organs of cattle was provided by the 22 cases of infertility from which fungi were obtained. Eight of the cows concerned had had recent unexplained abortions whilst several others had persistently returned to service. In one herd of 50 cows and heifers, no live calves had been born for several months, abortions having occurred repeatedly at the six to seven month term. Metritis was reported twice and one case, involving a number of cows, yielded the only isolate of *Cryptococcus neoformans* recorded during the Survey, but the evidence was insufficient to record the outbreak as cryptococcosis.

The one sample of vaginal mucus examined directly had abundant hyphae growing in it and on culture gave twelve species, including several potential pathogens, *viz.*, *Aspergillus fumigatus*, *Absidia corymbifera*, *A. ramosa* and *Mucor pusillus*. Two semen samples gave a variety of fungi but *Absidia ramosa* was the only species found from both male and female organs. *Penicillium piceum* grew in quantity from the preputial washings of a bull but did not appear to be of any pathogenic significance.

A slight seasonal fluctuation in the numbers of cases was noted, with 14 during November to April, and five during May to October.

Mycology. 64 per cent. of the 39 isolates from reproductive organs belonged to fungus species also found in association with mycotic abortion, with a predominance of *Absidia ramosa*, *A. corymbifera*, and *Aspergillus fumigatus*. 73 per cent. of all the isolates occurred as the only potential pathogens present. Except for *Geotrichum candidum*, the remaining fungi were found once each and some were clearly contaminants.

Bovine Mastitis and Milk Isolates

The pathogenicity of certain fungi to the bovine udder was not pointed out until Rölle (1934) reported mastitis in five cows following feeding with brewery by-products. He considered the outbreak was due to a yeast. A few other cases have since been noted (Stuart, 1951; Hulse, 1952), but the species observed have rarely been named. Lernau *et al.* (1947 and *in lit.*), however, isolated *Pichia farinosa* from 17 cows, whilst an extensive outbreak of mastitis caused by *Cryptococcus neoformans* has recently been reported from the United States by Pounden *et al.* (1952).

During the Survey five milk samples for direct examination and 73 cultures from milk were received. In nine cases various pathogenic bacteria were re-

ported from the same samples but in many the fungi were the only organisms recovered, often in quantity. From the case histories given, clinical mastitis was observed on 38 occasions, whilst, beyond the milk samples being abnormal, the pathological conditions associated with the other isolates were unfortunately not specified.

Mycology. Of the 35 species of fungi from mastitis milk, only *Pichia farinosa* had been previously reported as a cause of mastitis. Most of the other species were frequently isolated from animal sources, and their diversity suggests the non-specific nature of the condition.

The most abundant species found were *Absidia ramosa*, *A. corymbifera* and *Aspergillus fumigatus*, but *Candida krusei* was noteworthy in occurring by itself in six out of seven cases and being definitely associated with penicillin-resistant mastitis in three. Aerobic actinomycetes were present in five cases. More than the three records of *Geotrichum candidum* might have been expected from milk, for *G. candidum* (syn. *Oidium lactis*, *Oospora lactis*) is the classical fungus from this substrate.

Mycetoma in a Goat Udder. Apart from the 13 samples of milk containing yeast cells, no pathological material was available from the bovine udder, but evidence of the ability of a filamentous fungus to invade the udder of a goat was obtained. In this case antibiotic treatment for mastitis was unsuccessful and subsequently a large plate-like, nodular lesion appeared in one quarter. On removal and sectioning this nodule showed regularly radiating fungal hyphae throughout its caseous substance. No pathogenic bacteria were isolated from milk samples, but "yeast-like bodies" were observed in them. Unfortunately the identity of the fungus was not established. It was possibly *Aspergillus fumigatus*.

Environmental Factors and Previous Antibiotic Treatment. The lack of adequate records makes it impossible to draw any conclusions about the severity of the condition (whether acute or chronic), its relative occurrence early or late in lactation, seasonal variation, or the environmental conditions. The only factor which may have had some influence on the incidence of this type of mastitis appears to have been previous treatment with antibiotics. Thirteen of the cases had histories of such treatment, and some nine of these were reported to be resistant to penicillin therapy, but in view of the current practice it seems probable that a proportion of the remaining 65 cases had also received antibiotics.

Isolations From Mouldy Hay, Alimentary Canal, Faeces and Lungs

As mentioned in the Introduction, a number of fungi with pathogenic tendencies, commonly occur as saprophytes in the environment of animals, *e.g.* in mouldy hay. Their contribution to the adverse effects of feeding such mouldy fodder is unknown but the specimens received during the Survey have thrown some light on the variety of fungi present and indicated several ways in which they may be involved.

Isolations from Hay and Fodder

Samples of hay or cultures were received from 11 cases of digestive and other troubles (nine bovine, two from pigs) associated with the feeding of mouldy hay, etc., to stock. The symptoms noted were scouring (in four cases), haematuria (two), pneumonia (one), and sudden death (two), and all but two of the cases were from adult animals.

Mycology. Eighty-nine isolates representing 35 species were obtained from the samples of mouldy hay, dried grass pellets, and pig meal. At least five potential pathogens, *Aspergillus flavus*, *A. fumigatus*, *Absidia corymbifera*, *A. ramosa*, and *Mucor pusillus*, were found growing as saprophytes in the material, but they were by no means the dominant fungi. The vast majority of the species were characteristic of decaying plant material or of soil, and their importance does not appear to lie in their pathogenicity. On the other hand, as mentioned under mucormycosis in guinea-pigs, both *Absidia corymbifera* and *A. ramosa* were isolated from the hay in use at the time the disease was prevalent and in three outbreaks of aspergillosis, *Aspergillus fumigatus* was isolated from the litter.

The quality and quantity of the fungus flora observed by direct examination of the samples was often very different from that appearing in cultures, and some attempt was made to assess this difference. It was found that the most frequent species observed directly belonged to the *Aspergillus glaucus* group, more especially on processed fodder, and also that a number of moulds, *e.g. Arthrinium* sp., were seen but not cultured later, probably because of competition with faster growing forms. The fungal flora of these samples as shown by the list of species (Table VII), only represents those species which appeared in culture and certainly does not correspond in either quality or relative frequency to that in the sample itself. Moreover the fungus flora of hay no doubt changes as it matures and the species found in these samples may not necessarily be those responsible for changes in their feeding qualities.

TABLE VII

ISOLATIONS FROM MOULDY HAY, ETC.

	Number of isolates		Number of isolates
Absidia corymbifera ...	3	*Fusarium* sp. *culmorum*	1
" *ramosa* ...	7	*Mucor pusillus* ...	3
Aspergillus candidus ...	3	" *racemosus* ...	1
" *flavus* ...	2	*Paecilomyces varioti* ...	1
" *fumigatus* ...	4	*Penicillium* spp. ...	8
" *glaucus* (series) ...	6	*Pullularia pullulans* ...	1
" *nidulans* ...	4	*Rhizopus arrhizus* ...	1
" *niger* ...	5	" *stolonifer* ...	1
" *terreus* ...	4	*Saccharomyces bisporus*	1
" *versicolor* ...	3	" *fragilis*	1
Candida krusei ...	1	*Scopulariopsis brevicaulis*	4
Cephalosporium sp. ...	2	*Stysanus microsporus*	2
Chaetomium funiculum	1	*Trichoderma köningii*	2
" *indicum* ...	1	" *viride* ...	1
Cladosporium herbarum	3	*Trichosporium cerealis*	3

Aetiology of "mouldy hay poisoning." There are several ways in which mouldy hay may be implicated in disorders of animals. The moulds may be directly pathogenic, as in mucormycosis; the fungus mycelium and spores may be toxic, as with the sclerotia of the ergot fungus (*Claviceps purpurea*); the animals may develop an allergic response to the mould spores or air-borne fragments of the decomposing hay; or else mould growth may produce deleterious changes in the food value of the hay, by releasing or producing toxic substances.

No direct evidence was obtained during the Survey that any one of these alternatives was in fact concerned in the aetiology of the cases dealt with, except in the single confirmed outbreak of ergotism in cows. An analysis of the fungi present in the hay samples and those found from all animal sources shows that whereas only 32.8 per cent. of the latter were found in hay, 64.6 per cent. of the pathogenic species (dermatophytes excluded) were recorded from this material. This suggests that mouldy hay is a source of the fungi causing aspergillosis, mycotic abortion, and a number of the other conditions.

Isolations from the Alimentary Canal

No pattern of frequency could be detected among the isolates from 25 cases involving the alimentary canal, perhaps because of the small numbers involved. Some of the specimens were linked with hay and faeces samples and had been reported following the feeding of mouldy hay, others came from ill-defined conditions, whilst the two suspected cases of moniliasis in mammals have already been discussed.

Isolations from Faeces

The relationship of the faeces isolates to the pathological conditions in the 18 cases (cattle, 14; pig, two; horse, one; dog, one) with which they were associated was uncertain, and most of the fungi recorded can be considered as normal members of the fungus flora of dung. The disease conditions noted in 15 cases were chiefly diarrhoea (ten), suspected Johne's disease (two) and heavy worm infestation (three).

Absidia corymbifera and *A. ramosa* constituted 35 per cent. of the isolates and most of the other 13 species were familiar saprophytic moulds. However, in view of its frequently alleged pathogenicity, it is perhaps worth mentioning the occurrence of *Geotrichum candidum* in abnormally large quantities in the dung of a pig and a dog, on each occasion associated with serious diarrhoea. It is known that this species can exist saprophytically in the alimentary canal of animals and man but like *Candida albicans* it may be capable of causing disease.

One outbreak of scour in steers was thought to be due to the consumption of mouldy grass nuts, which when examined were found to be covered with a heavy growth of *Aspergillus glaucus sensu latum*. Dilution plates of these nuts gave *Trichoderma köningii* and *Scopulariopsis brevicaulis* in addition, and it is of interest to record that these three fungi were also the most frequent isolates from the faeces dilutions.

Miscellaneous Lung Isolations

Isolates from lungs were associated with a great variety of pathological conditions. *Aspergillus flavus* was isolated from the lungs and nasal discharge of a sheep, one of 12 which had died following grazing on too lush a pasture. In both a rabbit and a mink an undiagnosed lung infection gave cultures of *Mucor racemosus*, whilst the latter also gave *Saccharomyces cerevisiae*, bearing out the observation of yeast cells in smears of lung tissue. The other yeast isolated from mammalian respiratory organs was *Candida pulcherrima* which grew from the nasal discharge of a horse suffering from chronic bronchitis and was accompanied by *Aspergillus terreus* and *A. nidulans* in some profusion. Fungus cells were also observed in the mucus. From 25 cases, mostly fatal, associated with respiratory symptoms in young cattle and pigs, aerobic actinomycetes were isolated and on 13 occasions they were the only organisms recorded. The similarity of the symptoms in these cases may indicate the existence of an unrecognised condition in which aerobic actinomycetes are involved.

The isolation of *Trichosporon cutaneum* from the throat of a Cairn Terrier suffering from fever, coughing and swollen lymph glands attracted some attention because, although tuberculosis was suspected, there were no traces of acid-fast bacteria.

Mycology. Aspergillus fumigatus, A. flavus, A. nidulans, A. niger, and *A. terreus* were all isolated from lungs, although lesions were only reported in aspergillosis of guinea-pigs. *Absidia corymbifera, A. ramosa* and *Mucor pusillus*, all known pathogens, were also recorded. Two of the aerobic actinomycetes have been placed in *Nocardia* and the remainder in *Streptomyces*, but without specific identifications.

One case provided an opportunity to compare the fungi present in the lungs and stomach of a calf with those isolated from a sample of mouldy hay on which it had fed shortly before death. The two species common to all three sites were *Aspergillus terreus* and *Absidia ramosa*, the lungs and stomach contents both gave *Aspergillus fumigatus* and *Absidia corymbifera*, whilst *Aspergillus nidulans* was common to the lungs and the hay sample. Five other species found in this case occurred only once.

A similar case in piglets gave further evidence of the presence of fungi in lungs when the finding of germinating *Aspergillus* spores in lung tissue washings seeded on to malt agar plates, demonstrated that at least some of the fungi isolated from these organs were present as spores.

Isolations from the Excretory System

All the fungi obtained from the excretory system were isolated from urine samples. *Absidia ramosa* was isolated from three cows, one of which had Johne's disease, and another haematuria.

Visible hyphae in the urine of a sow gave a profuse growth of *Penicillium crustosum* in culture; possibly sufficient to point to an infection of the excretory organs.

Mucormycosis in guinea-pigs provided the only example of a kidney isolation.

Isolations from the Nervous System

The three isolates from the brain tissue of calves are all worth noting, both because of their rarity and because each may represent a mycotic infection not previously recognised in this country.

A three-week-old Shorthorn heifer calf showed acute nervous symptoms before death and on *post-mortem* examination a large central abscess was found in the ventricles of the brain. *Actinomyces bovis*, kindly identified by Dr. Dagny Oxford, was isolated from this lesion. In the second case *Absidia ramosa* was isolated from several portions of the brain of a calf which died soon after birth. On this farm almost every calf (c.90) born during the previous three years had died from an unknown cause. In the same area as this case, *Mucor pusillus* was isolated from the brain and other parts of the body of a calf which had died suddenly.

The two instances of the invasion of the brain in poultry by *Aspergillus fumigatus* have already been recorded under aspergillosis (Table V).

Haplosporangiosis in Moles

In conclusion, attention may be drawn to the discovery of haplosporangiosis (caused by *Haplosporangium parvum*) in Britain. This disease was first described by Emmons & Ashburn (1942) from North America, where it has since been recorded in many species of wild rodents and insectivores. The symptoms are pulmonary and the disease has attracted special attention because its pathology shows certain similarities to that of coccidioidomycosis (*Coccidioides immitis*). The characteristic spherules of *H. parvum* were first observed in this country in 1953 by Dr. A. McDiarmid of the Agricultural Research Council Field Station at Compton, who found them in the lungs of moles dying in large numbers from an unknown cause. Unfortunately no fresh material was available from this epizootic and it was not until May, 1954 that the observation was confirmed by the isolation of the fungus in pure culture.

On this occasion, however, the isolations were made from the lungs of apparently healthy moles, trapped in the Compton and Exeter districts. Of the 31 lungs examined, 25 were visibly infected. The significance of haplosporangiosis in relation to the periodic fluctuation in the mole population is in no way understood, but this record is of interest as it provides both a new host for *H. parvum* and the first record of haplosporangiosis in Europe. For further details see McDiarmid & Austwick (1954).

Summary

During a two-year Survey of fungi associated with disorders of farm animals in Britain, more than 1,200 isolates of fungi were identified from nearly 700 cases of mycotic or suspected mycotic infection. These isolates were classified in 125 species, of which approximately 25 are considered to be usually, or on occasion, pathogenic and to have been causally involved in approximately 300 cases.

The more familiar mycoses recorded during the Survey were avian aspergillosis (caused by *Aspergillus fumigatus* and occasionally by *A. nidulans* and *A. niger*), ringworm (in cattle, horses, cats and dogs), and avian moniliasis. Aspergillosis was frequently noted in poultry and in birds in captivity and also in a few wild birds. All cases of cattle ringworm confirmed by laboratory examination were caused by *Trichophyton discoides*. One third of the cases of avian moniliasis occurred among turkey poults during July, 1953. Case histories suggest that there is still much to learn concerning the epidemiology and control of these three conditions.

No new major mycosis was discovered, neither were any of the important mycoses of domesticated animals endemic in other parts of the world recorded for Britain. A hitherto undescribed disease of guinea-pigs caused by *Absidia corymbifera* and *A. ramosa* was investigated and the finding of haplosporangiosis (*Haplosporangium parvum*) in moles is both a new host record for this prevalent mycosis of North America and a new European record for the condition.

The series of cases of otherwise unexplained bovine abortion associated with fungi support the view that fungi are not infrequently the cause of abortion in cattle and that "mycotic abortion" merits the status of a distinct clinical condition.

Most of the mastitis cases from which fungi were isolated could not be attributed to any other cause. The condition frequently occurred following antibiotic therapy.

Fungi were also recorded from the repiratory, digestive, excretory and nervous systems of animals and the significance of the isolates is discussed in relation to the fungus flora of mouldy hay and fodder, which is considered as a potential source of pathogens.

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Rabies in Germany

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AN epizootic of rabies, described as more serious than any in Western Europe for at least a century, has been spreading westwards across Germany and now threatens neighbouring countries. It was discussed at a recent meeting of the Public Health Committee of the Brussels Treaty Organisation.[1]

After the first world war, infected dogs, wolves and foxes from the east caused an outbreak on the eastern borders of Germany. This reached a peak in 1924, but veterinary police measures thereafter kept infection beyond the frontiers until the second world war, when it again increased. The disease seems to have been prevalent in Eastern Germany from 1945, particularly in foxes and wolves, which could not be shot because the people lacked firearms. By 1948 the epizootic had passed the Schleswig-Holstein border in the north and reached Austria in the south, and had passed from foxes to dogs, though it preserved its essential difference from earlier outbreaks—namely, the infection of wild rather than domestic animals.[2] In 1951 Eastern Bavaria was infected and by last spring large areas from the Danish frontier to Hesse, and some districts bordering the Dutch and Belgian frontiers, were declared infected or suspected. Thus, in about 10 years the epizootic had spread stealthily right across Germany, though most of the southern parts of Western Germany remain free.

Though the disease is more easily detected in domestic than wild animals, two-thirds of the material diagnosed as rabies in the Government veterinary laboratories has come from wild animals (foxes, badgers, roe-deer, hares, rabbits, weasels, wild boars, squirrels, rats, buzzards, and magpies); cats, dogs, cattle and other domestic animals have provided the remainder, though in herbivores infection is rare. Incidence is highest in winter and spring, and rivers seem to be no obstacle to spread. The chief diagnostic signs are the well-known changes in behaviour. Thus, foxes lóse their fear of man and may be seen walking in a village street: they have even allowed themselves to be picked up by children. Refusal of food, and biting of inanimate objects are characteristic, as are changes in voice. Buzzards, in which Negri bodies were afterwards found, have dashed themselves to death against windows. In material from animals in which rabies have been clinically confirmed, Negri bodies have been found in about 75 per cent.[3] In addition, the intracerebral and intramuscular injection of suspect material into white mice is employed.

Only one case of human rabies has occurred in Western Germany, but the number of people vaccinated is large and rapidly increasing, *i.e.* 423 in 1953 and 828 up to June 5th, 1954, the greater part from Lower Saxony, North Rhine, Westphalia, and Hesse. Vaccination is recommended for all who have been bitten, scratched, or licked by infected or suspected animals, who have handled them, or who have been in contact with their saliva (*e.g.* on muzzles or pieces of wood). No cases of post-vaccinal paralysis are reported and hyperimmune serum has not been employed.

The basic control measures are: first, notification; secondly, destruction of foxes and badgers by shooting and cyanide fumigation of the earths; and thirdly, declaration of infected or suspected areas. In such areas dogs must be kept tied up for three months and cats kept at home; any found at large are shot, and, since sooner or later a cat will " walk by itself," most cats in these areas have to be killed. Energetic measures against foxes—3,000 have been destroyed in the province of Detmold (North Rhine, Westphalia) in eight months—seems to have been effective in stopping the epizootic. Education of the public is regarded as very important.[4] It is noteworthy that vaccination of dogs has been rejected as a control measure on the grounds that (a) wild animals are chiefly affected; (b) cats are considered more dangerous than dogs; (c) police measures have been successful in the past in controlling infection in dogs; (d) vaccinated dogs must still be controlled, because their saliva is infectious, even though they are protected against clinical development of the disease; (e) the public would be less likely to co-operate in other control measures if dogs were vaccinated; and (f) the cost and effort in vaccinating all dogs would be very great. For these reasons the vaccination campaigns such as have been successful in Hungary, Japan, Israel, and Malaya[5] are not thought to be applicable to conditions in Western Germany.

Denmark has so far remained entirely free, thanks perhaps to destruction of foxes along the frontier and mass vaccination of dogs in frontier areas. It seems unlikely, however, that such measures will stop the epizootic from crossing the long western frontier of Germany.

For us the moral is clear. Quarantine has fallen into disuse as a prophylactic measure against many diseases, but against animal rabies it remains our great protection. Anyone smuggling in a dog from Western Germany commits not only an offence but a serious crime against the canine—and perhaps the human—population in this country.

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ADVERTISERS' ANNOUNCEMENT

Parke, Davis & Company, Limited, wish to announce the introduction of Chloromycetin Tincture 10 per cent. for the treatment of contagious foot rot in sheep. This new preparation combines 10 per cent. Chloromycetin with 0·5 per cent. gentian violet and a phenolic resin in an alcoholic solution. It is supplied in bottles of 2 fl. oz. (56 c.c.) with a brush.

The Memorial Library of the Royal College of Veterinary Surgeons

BY

Professor G. F. BODDIE

Chairman of the R.C.V.S. Library Committee

Introduction

IT would appear that many members of the veterinary profession are not aware of the nature and extent of the library facilities available to them at Red Lion Square. It may be that in part this is due to a lack of publicity for these facilities and it may, perhaps with truth, be said that the R.C.V.S. Library has tended to hide its light under a bushel. Naturally, when the profession is ignorant concerning their own Library, some questing regarding its value tends to arise. This is not a new problem, for as long ago as 1918 Gladstone Mayall, in a letter to THE VETERINARY RECORD, drew attention to the "ignorance in the profession" concerning the Library. It is in an endeavour to remedy this that the present article has been prepared.

"There has been a small Library at the Royal College almost from its foundation, but, owing to the entire absence of funds for such a purpose, the only books it contained were those which a few generous-minded members of the profession presented to it and those which came gratuitously thereto from the publishers" (Editorial, *Vet. Rec.*, April 16th, 1921). During the 80 years following the granting of the first Royal Charter, the R.C.V.S. slowly gathered a unique collection of precious volumes of historical interest; these have been carefully preserved.

In 1921 with the institution of an annual fee, it was possible to allocate a relatively small annual sum towards library development. At that time too, the balance of the war memorial fund, which had been collected to commemorate those who had made the supreme sacrifice in the 1914-18 war, after providing a memorial tablet, was formed into a War Memorial Fund. The income from this endowment is entirely devoted to Library purposes.

Development of the Library received staunch support from the National Veterinary Medical Association. Indeed, the stimulus that led to development of the R.C.V.S. Library originated in the N.V.M.A.

and was given expression in the columns of THE VETERINARY RECORD. In the striking editorial, from which a quotation is given above, THE VETERINARY RECORD commended the R.C.V.S. Library to the profession. This editorial concluded with the striking sentence: "By the completeness of our Library our culture may be judged."

Gradually the top-floor room in the Red Lion Square building was put into order and furnished appropriately. A unique contribution to these furnishings was that provided by the Miss Aleen Cust Memorial Fund, raised by the profession largely with help in the form of publicity given by the N.V.M.A. through the columns of THE VETERINARY RECORD. This fund was used to buy a periodical rack, a dozen chairs and sufficient reading tables. Thus furnished, the Library began to take on the form desired by the veterinary profession and the co-operation between the R.C.V.S. and N.V.M.A. in securing this is ample evidence, if any is required, that the development of the Library at Red Lion Square was the widely held desire of the veterinary profession.

Unfortunately, the Library was grievously damaged by enemy action during the 1939-45 war. Gradually restoration work went on until the Library resumed its former appearance. The accompanying photograph gives some idea of the proportions and furnishings of the Library. Owing to the limitations of space in the R.C.V.S. buildings the Library staff must work in the Library. While this has many disadvantages from the administrative point of view, they do try to disturb readers as little as possible.

In the Library the visitor can consult any work and, if he wishes, can sit, read, and make notes. He may, with certain exceptions, borrow books and periodicals to study at home. For those who cannot get to London a postal service is maintained, by which members can obtain the same facilities for borrowing books and periodicals as they would if they called personally at the Library. Increasing use is being made of these services and the Librarian is always only too willing to advise readers as to matter available on a particular subject by correspondence in much the same way as would be done verbally with a caller. Since the Library has been restored following the war damage, there has been a progressive increase in the use made of the facilities provided for the profession.

The R.C.V.S. Library is part of the great co-operative network of libraries headed by the National Central Library. The services provided by this network are reciprocal and are best described by the term inter-library loans. Thus, the R.C.V.S. Library can borrow from another library a book wanted by a reader but not in the R.C.V.S. Library. Equally, another library may borrow from the R.C.V.S. Library for its readers. It is interesting that in-going and out-going inter-library loans through the R.C.V.S. Library are approximately equal.

While a member of the R.C.V.S. may borrow books through his local library which will obtain them through the inter-library network, he will normally get them more quickly by direct application to the R.C.V.S. Library. In addition, the R.C.V.S. Library staff, knowing veterinary literature, can be of great help to him.

Historical Collection

In the Historical Collection are included all works published prior to 1850. This is an unique collection ranging from 1528 onwards. THE VETERINARY RECORD has referred with pride to this collection which includes the first edition of Vegetius, printed at Basle. Much of the Historical Collection owes its existence to generous donors. This collection suffered somewhat grievously during the war, but it is now being repaired and restored, the cost being borne by the War Damage Commission.

A catalogue of the Historical Collection was published in 1953 and copies are on sale at a price of 2s. 6d. Many of the books in the Historical Collection are too valuable to be sent out on loan, but they can be studied in the Library.

Modern Works

The Library now has a good stock of modern books, both those that might be described as being veterinary books and those that might be described as being of immediate or relatively direct veterinary application. A catalogue of the modern works in the Library, published between 1900 and 1954, is in the course of publication and should be available in 1955. When a book not in the Library is wanted by a reader, this normally can be obtained on quite short notice through the inter-library loan system. Books from abroad cannot be sent from the Library to readers, though they may be read in the Library. In some cases, such books may be sent to a local library where a reader can consult them. Arrangements exist whereby microfilm can be prepared and sent to the reader whether at home or abroad. Usually he can arrange to have the use of the necessary small apparatus required to read the microfilm.

Periodicals

Naturally, a valuable feature of the R.C.V.S. Library is the periodicals which it takes in; the list includes not only those in the English language but many in foreign languages. Here again the B.V.A. provide much appreciated help by furnishing periodicals obtained by them in exchange for THE VETERINARY RECORD. The list of periodicals taken by the Library is too long to include in this article but it can be obtained from the Librarian on request.

Included under periodicals are a large number of reprints, reports both from at home and abroad. Copies of these, including foreign ones obtained through such agencies as UNESCO, are also to be found in the R.C.V.S. Library.

Bibliographic Services

The Library staff, being familiar with veterinary and allied literature, are able to help members of the profession. Thus, the practitioner member may wish to write a paper on some clinical subject and wishes references dealing with that subject. Some-

(Continued at foot of column opposite)

Current Literature

ABSTRACTS

Brucellosis as a Hazard of Blood Transfusion. WOOD, EILEEN, E. (1955). *Brit. med. J.*, January 1st, 1955, pp. 27 to 28.

Since the introduction of low-temperature banks for the storage of blood, transmission of disease by transfusion has become negligible. Two cases were reported at the second Mexican Brucellosis Congress in 1944 in which brucellosis was clearly transmitted by blood transfusion. There appears to be no record of such transmission in this country, hence the importance of the present case.

The blood donor returned home from giving her regular donation feeling very unwell. She did not consult her doctor for ten days though she had been unwell all the day. A fortnight after consulting her doctor she was admitted to hospital with undulant fever. Two days after admission her blood serum agglutination titre for *Br. abortus* was 1:1,280.

The recipient, whose life depended on weekly blood transfusions, was given the above donor's blood six days after its withdrawal on the day she first felt unwell. Information was transmitted to the Regional Transfusion Centre that the donor was suffering from brucellosis. Though the recipient was seen regularly, it was not until 13 weeks after the transfusion mentioned that he complained of feeling unwell though he admitted to having a cold. On the following day, his blood serum agglutination test for *Br. abortus* was 1:2,560. Treatment with chlortetracycline ("aureomycin") six-hourly for six days resulted in a return of temperature to normal but he remained depressed. Veterinary enquiry at the farm from which the donor received her milk failed to reveal the presence of brucella abortion, but by the time the enquiry was instituted, only one of the two cows could be traced.

The recipient had been suffering from a severe aregenerative anaemia and it is possible that he was less competent than a normal individual to deal with the small number of organisms transfused. The prodromal period is often measured in weeks, and the mean incubation period to the onset of earliest symptoms has been computed as 10 weeks and to the onset of severe symptoms as 13 weeks, the time at which the disease was diagnosed in the above case.

G. F. B.

A Comparison of Vaccination with Vole Bacillus and B.C.G. Vaccines. FREW, H. W. O., DAVIDSON, J. R., & REID, J. T. W. (1955). *Brit. med. J.*, Jan. 15th, 1955, pp. 133 to 136.

The report describes an investigation designed to compare vaccination of children with B.C.G. vaccine and vole bacillus vaccines. It records the preliminary results after one and two years. The B.C.G. vaccine was given intradermally and the vole vaccine by multiple puncture to those of five years and over and intradermally to those under five years.

The rate of conversion to tuberculin sensitivity was a little slower with vole vaccine than with B.C.G. vaccine, but the percentage conversion rates of 95 per cent. after six weeks and 100 per cent. after 12 weeks were very satisfactory and compared closely with those obtained with B.C.G. vaccine.

All the first series of cases have been followed up for over two years and no case of tuberculous infection has been reported. The risk of infection to which the children are exposed would appear to be very low for they are inmates of children's homes where no cases of active tuberculosis have been found at any of the annual examinations with the mass miniature radiography unit.

The reversion rates were more favourable for vole vaccine than for B.C.G. vaccine, suggesting that the allergy produced by vole vaccine is more permanent, or at least stronger than that resulting from vaccination with B.C.G. The relative absence of exposure to infection may be related to the comparatively high reversion rate experienced with both B.C.G. vaccine and vole vaccine. There was a definite loss of allergy with both vaccines after two years, but data are not available as to what percentage of reversions can be expected after three, four, or five years.

Unfortunately, induration developed in a substantial proportion of the cases receiving vole vaccine by multiple puncture and later lupoid reactions occurred in the vaccination area. The appearance of lupoid reactions at the second yearly inspection of arms regarded as healed at the first yearly inspection, was unexpected and unfortunate. The rate of these reactions is regarded as being too high to permit of the routine use of the vaccine until this difficulty can be overcome, though the preliminary results of this investigation suggest that vole vaccine may be an effective immunising agent.

G. F. B.

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times a member recollects reading an article but has mislaid the reference. Usually the Library staff can trace the reference for him and will also furnish him with an up-to-date list of references relating to the subject. Another service is regularly to notify a member of references dealing with a subject in which he is interested.

Research workers and Ph.D. students are constantly receiving help from the Library staff in relation to the literature of their particular subject.

Accessions

THE VETERINARY RECORD now publishes a regular select list of material received, so that members of the profession are informed as to what is becoming available and may make use of it as soon as possible.

Library Hours

For those members who can call at Red Lion Square, there is always a welcome in the very pleasant room overlooking the Square itself. The hours of opening are from 10 till 5 on weekdays, except Saturdays when the Library closes at 12 noon. On Bank Holidays, the College premises as a whole are closed. If the opening hour of 10 a.m. seems rather late, it should be appreciated that the Library staff are on duty earlier, but the time before opening is used by the staff to deal with the mail, which, in view of the postal services to members, is often heavy.

News and Comment

UNIVERSITY OF LIVERPOOL

B.V.Sc. 2nd Examination, January, 1955

Part I. Anatomy (including Histology and Embryology)—Ashcroft, R. A.; Ashworth, K. T.; Barr, D. A.; Barrett, S.; Bolger, K.; Butler, C. L.; Bygrave, A. C.; Davies, E. B.; Death, R. W. J.; Harrison, F. A.; Hilder, E. F.; Hobson, G. J.; Holmes, J. A. R.; Howell, J. M.; Jenkinson, T. A.; Knifton, A.; Malkinson, M. H.; Mears, Hazel; Menear, H. C.; Tandy, J.; Waterworth, J.; Williamson, G. A.

Part II. Physiology (including Biochemistry)—Ashcroft, R. A.; Ashworth, K. T.; Barrett, S.; Bolger, K.; Butler, C. L.; Bygrave, A. C.; Davies, E. B.; Francis, P. G.; Harrison, F. A.; Hilder, E. F.; Hobson, G. J.; Holmes, J. A. R.; Howell, J. M.; Jenkinson, T. A.; Knifton, A.; Malkinson, M. H.; Menear, H. C.; Tandy, J.; Williamson, G. A.

ANNIVERSARY RECEPTION

The President and Council of the Association of British Pharmaceutical Industry held a Reception on the evening of January 14th, in the Great Hall of B.M.A. House, to celebrate the 25th anniversary of the formation of the Association. Despite the severe weather conditions, over 230 guests attended and were received by the President (Mr. J. F. Boucher, M.P.S.) and the Vice-President (Mr. C. M. Hill).

Among the guests were: Professor Robertson, President of the B.V.A.; Dr. W. R. Wooldridge, President, Royal College of Veterinary Surgeons; Mr. W. G. R. Oates, Registrar and Secretary, R.C.V.S.; Dr. A. W. Stableforth, Director of the Ministry's veterinary laboratories at Weybridge; and Mr. F. Knight, General Secretary of the B.V.A.

MR. JOS. B. ELLSE

"E. W." writes: Very many people in the Derby area will remember Mr. "Joe" Ellse, a senior veterinary practitioner, with sincere affection. He died on January 4th in his 66th year. He was admitted to the Supplementary Register in November, 1949, and it would, perhaps, be no exaggeration to say that no one on that Register was more deserving of admission to it. He was a man of charm and integrity, and it was always a pleasure to the writer to meet him socially or professionally. His relations with his fellows within the profession were unusually happy, and his strictly ethical conduct will be remembered by them for many years to come.

WOOD-PIGEONS

Now that myxomatosis has appreciably reduced the number of wild rabbits in most districts, the wood-pigeon is coming to be regarded as the farmer's number one pest. Farmers may find that the all-out efforts they are making to destroy rabbits that survive myxomatosis will result in more food for wood-pigeons unless the numbers of these birds are kept down.

The Ministry's research workers are experimenting with new and more scientific methods of control such as the use of narcotics but, for the present, organised shooting is the only effective method against wood-pigeons and it is essential that full use should be made of the facilities available. Last year something like 2¼ million birds were reported to have been shot by organised shoots and this number should be substantially increased this year because, owing to the shortage of rabbits, shooters will be looking for other targets.

Those who wish to participate in these shoots, which are usually held on Saturdays, with Wednesdays or Thursdays for subsidiary shoots, up to the end of March, should get into touch with their local organiser or with the Pests Officer of the County Agricultural Executive Committee for further information. The wood-pigeon is a sporting target and anyone taking part in these shoots will not only enjoy good sport but will be performing a useful service and earning the gratitude of farmers. Cartridges are provided to approved wood-pigeon shoots at half-price through County Agricultural Executive Committees.

FOOT-AND-MOUTH DISEASE ORDER

An Order made by the Minister of Agriculture on January 22nd has declared the following area to be an infected area for the purpose of preventing the spreading of foot-and-mouth disease :—

The City and County Borough of Newcastle-upon-Tyne.

The County Boroughs of Gateshead, South Shields, Sunderland, and Tynemouth.

County of Durham—The Borough of Jarrow. The Petty Sessional Divisions of Blaydon and Jarrow.

Petty Sessional Division of Chester-le-Street—The parishes of Lamesley, Birtley, Ouston, Urpeth, Harraton, Pelton, and Washington.

Petty Sessional Division of Houghton-le-Spring and Seaham—The parish of Offerton.

Petty Sessional Division of Lanchester Consett and Stanley—The parish of Stanley.

The County of Northumberland—The Boroughs of Blyth, Morpeth, Wallsend, and Whitley Bay. The Petty Sessional Divisions of Bedlingtonshire, East Castle Ward, West Castle Ward, and Morpeth Ward.

Petty Sessional Division of Bellingham—The parish of Capheaton.

Petty Sessional Division of Tindale Ward—The parishes of Kirkheaton, Kearsley, Wallridge, Ingoe, Black Heddon, Bitchfield, Heugh, Fenwick, West Matfen, East Matfen, Hawkwell, Ouston, Cheseburn Grange, Nesbitt, Harlow Hill, Welton, Spital, Newton Hall, Stelling, Clarewood, Nafferton, Whittle, Horsley, Ovingham, Bearl, Ovington, Prudhoe Castle, Eltringham, Prudhoe, including its detached part, Mickley, Hedley, and Duke's Hagg.

COMING EVENTS

Feb. 2nd.—Ordinary General Meeting of the Sussex Division, B.V.A., at the Old Ship Hotel, Brighton, 2.30 p.m.

Feb. 3rd.—General Meeting of the Central Division, B.V.A., at the Royal Veterinary College, Camden Town, N.W.1, 5.30 p.m.

Feb. 4th.—Annual General Meeting of the North of Ireland Division, B.V.A., at the Albany Rooms, 46, Royal Avenue, Belfast, 3.15 p.m.

Feb. 10th.—Annual Ball of the Royal (Dick) School of Veterinary Studies in the Assembly Rooms, George Street, Edinburgh, 8.30 p.m.

Feb. 10th.—Meeting of the Technical Development Committee, B.V.A., at 7, Mansfield Street, Portland Place, W.1, 11 p.m.

Feb. 11th.—Meeting of the Technical Development Committee, 10.30 a.m.

Feb. 16th.—Meeting of the Section of Comparative Medicine, Royal Society of Medicine, at the Zoological Society of London, Regents Park, N.W.1, 5 p.m.

Feb. 23rd.—Joint Meeting of the Society of Practising Veterinary Surgeons and the Central Division, B.V.A., at the Royal Veterinary College, Camden Town, N.W.1, 2.30 p.m.

Feb. 24th.—Meeting of the Essex Division, B.V.A., at the Essex Institute of Agriculture, Writtle, 7.30 p.m.

Feb. 25th.—Liverpool University Veterinary Society Annual Ball, in the Students' Union, Brownlow Hill, Liverpool 7, 8 p.m.

May 6th.—Royal Veterinary College 163rd Annual Ball at the Hyde Park Hotel.

Sept. 4th to 10th.—73rd Annual General Meeting and Congress of the British Veterinary Association at Belfast.

PERSONAL

Births

BANNATYNE.—On January 15th, 1955, at Glasgow, to Margaret, wife of Colin C. Bannatyne, M.R.C.V.S., a daughter, Annabel Catherine.

SAINSBURY.—On January 18th, 1955, at the Victoria Hospital, Barnet, to Ursula, wife of D. W. B. Sainsbury, PH.D., B.SC., M.R.C.V.S., a son, David Richard.

Marriage

HENDERSON—MAY.—On January 10th, 1955, at St. Columba's Church of Scotland, George Leonard Brunton Henderson, of 30, Claremont Road, Surbiton, and of Edinburgh, to Elisabeth Frances, only daughter of the late Lord and Lady May, of Weybridge.

ADDRESSES OF DISEASE-INFECTED PREMISES

The list given below indicates, first, the county in which are situated the premises on which disease has been confirmed, followed by the postal address and date of outbreak.

Anthrax

Derby. Old Hall Farm, Swarkestone (Jan. 17); Upper Hayes Farm, Kirk Ireton (Jan. 19); Old Hall Farm, Swarkestone (Jan. 21).

Durham. Dairy Farm, Woodside Farm, Wolviston, Billingham-on-Tees (Jan. 15); Redwell Farm, Shotley Bridge, Consett (Jan. 17); Oakwood, Redford, Hamsterley, Bishops Auckland (Jan. 22).

East Lothian. West Fortune Farm, Drem, North Berwick (Jan. 18).

Isle of Wight. Old Park Farm, St. Lawrence, Ventnor (Jan. 21).

Lancs. Whittington Farm, Carnforth (Jan. 18); Clintsfield Farm, Wennington, Lancaster (Jan. 21).

Leics. Westgate House Farm, Cambridge Road, Whetstone (Jan. 14); Groby Lodge Farm, Groby (Jan. 19).

Northumberland. Gloster Hill Farm, Amble, Morpeth (Jan. 15); Halfacre Farm, Catton, Allendale, Hexham (Jan. 22).

Notts. The Farm, North Leverton, Retford (Jan. 15); Manor Farm, Gonalston (Jan. 19); North Farm, Egmanton, Newark (Jan. 22).

Perth. Henhill Farm, Forteviot, Perth (Jan. 21).

Rutland. Wing Hall Farm, Wing, Oakham (Jan. 19).

Westmorland. Whitbysteads, Askham (Jan. 15); Town End Farm, Sandford, Warcop, Appleby (Jan. 21).

Yorks. Spanham Farm, Barningham, Richmond (Jan. 14); Grange Farm, Upper Poppleton (Jan. 15); Low House, Seamer, and Carlton Grove, Carlton-in-Cleveland, Stokesley, Middlesbrough; South Wood Field Farm, Nutwell, Armthorpe, Doncaster (Jan. 17); Upper Farm, Raskelf (Jan. 18); Bottom Farm, Midgley, Wakefield; Bleak House Farm, Patrington, Hull (Jan. 20); Thorner Lane Farm, Thorner, Leeds (Jan. 21); Wydra House Farm, Fewston, Harrogate; The Bungalow, Brough Road, South Cave, Brough (Jan. 22).

Fowl Pest

Beds. Bull Pond Lane Farm, Dunstable (Jan. 14); Station Field, Station Road, Stanbridge, Leighton Buzzard (Jan. 18); Hill Top, Aley Green, Luton (Jan. 19).

Cambs. Home Farm, Fen Ditton, Cambridge (Jan. 18); 4, Green Lane, Berwick, March (Jan. 19).

Essex. Duddenhoe End Farm, Elmdon, Saffron Walden (Jan. 22).

Gloucs. Valley Farm, Staverton, Cheltenham (Jan. 17); Tichburn, Hesters Way Road, Cheltenham (Jan. 21).

Herts. Harpenden Poultry Farm, Grove Road, Harpenden (Jan. 21).

Lincs. Grange Farm, Kirkby Underwood, Bourne (Jan. 15); 8, Chapel Street, Billingborough, Sleaford (Jan. 16).

Middx. Nursery Farm, St. Albans Road, Barnet (Jan. 22).

Norfolk. The White Hart, Repps, Gt. Yarmouth; Redhouse Farm, Yaxham; 4, Well Hill, Clint Green, Dereham; Church Farm, Rollesby, Gt. Yarmouth (Jan. 15); The Dairy, School Road, Ludham, Gt. Yarmouth (Jan. 18); Bloodhills Farm, Somerton, Gt. Yarmouth (Jan. 19); Grange Farm, Rollesby, Gt. Yarmouth (Jan. 20); Woodlands Farm, Fressingfield, Diss; 2, Crost Estate, Caister-on-Sea, Gt. Yarmouth; Woodlands, Caister Lane, Caister St. Edmunds, Norwich (Jan. 21); Street Farm, Garvestone, Norwich (Jan. 22).

Yorks. Plane Tree Farm, Barnbrough, Doncaster (Jan. 18); Wadsworth Farm, and Ivy Farm, Barnbrough, Doncaster (Jan. 21); The Grange, Aston, Sheffield (Jan. 22).

Foot-and-Mouth Disease

Northumberland. Annitsford Dairy Farm, Dudley (Jan. 22).

Swine Fever

Ches. Woodcott House Farm, Wrenbury, Nantwich (Jan. 24).

Cornwall. Dawna Farm, St. Winnow, Lostwithiel (Jan. 22).

Denbighs. Sutton Green Farm, Sutton Green, Wrexham (Jan. 18).

Lancs. Boundary Farm, South Lane, Bold Widnes (Jan. 18); Willmoor House Farm, Much Hoole, Preston (Jan. 20); 10, Beavans Lane, West Derby, Liverpool, 12 (Jan. 21).

Monmouth. Junction Bridge Piggery, Canal Bank, Malpas, Newport (Jan. 19); Gellihaf Farm, Maesycwmmer (Jan. 20); Crossways Farm, Chepstow (Jan. 24).

Oxford. North Farm, Stonesfield (Jan. 24).

Salop. Dingle Farm, Buttington (Jan. 20); High Hatton Hall, Stanton, Shrewsbury (Jan. 21).

Staffs. 1, Foundry Street Extension, Darlaston, Wednesbury (Jan. 18).

Suffolk. Star Farm, Bradwell; Hall Farm, Farnham All Saints, Bury St. Edmunds (Jan. 24).

Worcs. Piggeries, Wildmoor Lane,, Catshill, Bromsgrove (Jan. 22).

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal opinions of the writer only and their publication does not imply endorsement by the B.V.A.

EQUINE RADIOGRAPHY

Sir,—We are sorry to see that Mr. Berwyn Jones persists in believing that we made use of his researches without according him the recognition to which he would have been entitled if his suggestions were true.

In order to clear up any possible misunderstanding may we point out that the work for our paper was done in 1952-53 when we published a paper on related subjects in which we made reference to this radiographic study. Moreover his material did not reach us until 1954 and the material which he sent to Professor McCunn was not as he describes it since it consisted of only radiographs and prints without any accompanying notes on positioning.

We cannot but think that his memory must be at fault when he says that the radiographs were almost exclusively of living animals for now, on examining them for the first time, we find indications which lead us to believe that many of the pictures, including certain of those of the trunk, were of dead subjects.

It is always far easier to make accusations of plagiarism than it is for the victims of these attacks to refute them and under the circumstances we feel that we are entitled to ask Mr. Berwyn Jones to withdraw his unfortunate allegations.

K. M. DYCE,
F. S. DRURY,
R. H. A. MERLEN,

Royal Veterinary College,
Royal College Street,
London, N.W.1.

November 18th, 1954.

CANINE DISTEMPER

Sir,—Mr. A. N. Ormrod, in his letter of December 18th, attempts to uphold the view that a condition "hard pad disease" exists which is clinically distinct from distemper. In his list of differential signs under "hard pad disease," unsupported by figures or protocols, he records age incidence, temperature and respiratory symptoms which are at variance with our experience as summarised in the recent paper, and the basis of differentiation under other headings appears extremely slender.

In support of an alleged change in distemper, much has been said of the "classical" disease as studied under experimental conditions by Dunkin and Laidlaw in 1924-6. We should not lose sight of the fact, however, that these workers described the disease then occurring in the field as "of very variable severity with symptoms of protean character." Reference to even earlier observations, for example, those of Blaine (1817), Youatt (1845) and Friedberger and Fröhner (1898), will show clinical manifestations which appear to differ little from our recorded findings in the past few years. Quite apart from the vexed question of hyperkeratosis which we have already discussed (*Vet. Rec.* (1954), **66,** 607, and 623), can we unreservedly accept that distemper has undergone any fundamental change? In reviewing a voluminous literature we have yet to see a publication containing data which, in our opinion, adequately supports such a view.

With regard to the significance of virus variation it seems that the time for dogmatism has not yet arrived and laboratory worker and clinician alike would be well advised to exercise caution until certain fundamental aspects of distemper, notably in serology and immunology, have been more fully investigated. From our own experience, as summarised in the recent survey, a histological examination assists in

forming a more coherent picture of the distemper disease process and, in the meantime, this method of study might be of value to the clinician in any problematical case which succumbs. We should welcome for pathological examination representative portions of lung, bronchial lymph node, liver, spleen, urinary bladder, carpal and digital pads, cerebrum and cerebellum (or entire brain), these fixed in 10 per cent. formal. As full a clinical history as possible, including the estimated duration of illness, would also be appreciated.

We are, Sir,

Yours faithfully,

I. M. LAUDER,
W. B. MARTIN,
D. D. LAWSON,
R. S. F. CAMPBELL,

University of Glasgow,
Veterinary School,
January 20th, 1955.

BLAINE, D. (1817). *Canine Pathology*. London.
YOUATT, W. (1845). *The Dog*. London.
FRIEDBERGER, F. & FROHNER, E. (1898). *Veterinary Pathology*. (Edited by Hayes, M. H.). Hurst & Blackett, London.

MYXOMATOSIS

Sir,—The tragedy of myxomatosis has swept through this country during the dismal summer, and now the lonely hills are lonelier for the lack of the cheerful, scurrying forms of the rabbits. We must look back with shame at the times when we begrudged these fellow beings their quota of food. Did they really do so much harm that a Government edict of total extermination had to be promulgated? Surely such an inhuman decree is wrong, and all our instincts prompt us to resist its application at all times. Reports coming in from various parts of the country indicate that serious minded landowners and their veterinary surgeons have collaborated in immunising pockets of rabbits so that the balance of nature shall not be completely upset. But in sheep-rearing districts such as this we watch the buzzards hovering hungrily against the clouds and listen to the tales of the foxes' quest for other sources of food, and wonder whether our losses in the lambing season will offset our reputed gains in grass and grain that our departed rabbits might have eaten.

A curious side-effect of this massacre of the rabbits has been noticed in this practice, and I thought it would be interesting to report it. We have had several cases of Black Tongue in farm dogs. The dogs are brought in showing the typical symptoms of fever (104° to 106° F.), vomiting, anorexia, haemorrhagic diarrhoea, and reeling gait. The general appearance of stomatitis, gingivitis, and glossitis, together with the salivation and offensive breath, completes the classical picture of Nicotinic Acid deficiency.

In each case the owner reveals, on being questioned, that the dogs are kept on a diet of Indian corn meal supplemented with skimmed milk. Some dogs have subsisted on this very inadequate diet for years, but it is only recently that deficiency disease has appeared very noticeably. I believe the explanation for this is that hitherto the unfortunate dogs have been able to supplement their meagre rations by catching the occasional rabbit.

The condition is quickly cured with a couple of Hepatex T injections at four-day intervals, together with a course of Nicotinamide 100 mg. orally daily, and the cases present the farmers with a spectacular demonstration of the effects of deficiency of diet which does more good than listening to hundreds of words about balanced diets, vitamins, proteins, etc.

May I conclude by publishing the pious wish that all who willingly helped to spread myxomatosis should be for ever haunted by Bobby Burns' poem "To a Fieldmouse."

"I doubt na, whiles, but thou may thieve,
What then? poor beastie, thou maun live."

Yours faithfully,

F. B. EDWARDS,

Newgate,
Llanbrynmair,
Mont.
January 8th, 1955.

A LEGITIMATE GRIEVANCE

Sir,—One could be excused for expressing impatience with the views propounded by Mr. Taylor in the issue of January 8th. No doubt comparatively poor people do exist in this country now, but in a decimated quantity. Besides, from a moral standpoint, there is an almost inviolable argument that, if a person is not financially equipped to maintain the luxury of a pet in health and disease, he is not justified in maintaining it at all. I believe that at one time the welfare societies performed prodigious charitable works in connection with costers' ponies, and certainly, to-day the R.S.P.C.A. executes with great diligence an aesthetically satisfying function in dealing with strays, oil-soaked sea birds, kittens on ledges of masonry, and so on. But that does not in any way alleviate the existing state of affairs, in which the welfare societies have increased far beyond the bounds of even token necessity, in which they exceed their cause by performing luxury operations and treating the animals of those equipped to pay, and in which they can, and do, offer potent opposition to private practice. Let no man boast that he could "hold his own with the societies," for the laiety are more often impressed by chromium clinics than by sound treatment, and the window-dressing that a welfare society can display will invariably outshine the modest beginnings of a small-animal practice.

With regard to action by the Royal College, it is of interest to record that the writer once wrote an article which expressed in muted terms most of the

sentiments voiced by members during this correspondence. The article was submitted to, and accepted by, one of the better weeklies, but, on instruction from the writer, printing was delayed until an assurance was obtained from the Royal College that there was no undesirable matter in the text. The writer was eventually advised by the Royal College not to publish the article on the grounds that developments in our profession's relationship with the welfare societies were expected shortly. One is glad to learn that negotiations have begun.

Yours faithfully,

DENIS BRANAGAN,

Trumisgarry,
Lochmaddy,
Isle of North Uist.

January 21st, 1955.

Sir,—I have read with interest your correspondence "A Legitimate Grievance" and agree that there is a grievance. I am in a position to know, since I have been previously employed by a welfare society, and am now in private practice. While I am in sympathy with the small-animal practitioner who is an M.R.C.V.S., may I please make a plea for the S.V.R. practitioner who is, I suggest, in a worse position? He cannot even participate in the R.S.P.C.A./B.V.A. Voucher Scheme.

Seventy-five per cent. of practitioners on the Supplementary Register are employed by welfare societies, and include semi-retired practitioners who are not interested; but I am making a plea for the remaining S.V.R. practitioners who are in private practice suffering keen competition, and who yet respect the ethical code of the R.C.V.S.

I do not suggest that we should be allowed to advertise; rather, it is the welfare societies that should be restricted in their advertising. And could not S.V.R. practitioners who are members of the B.V.A. be included in the R.S.P.C.A./B.V.A. Voucher Scheme?

Yours faithfully,

RONALD LLOYD,

5, Velsheda Road,
Birmingham,

January 23rd, 1955.

Sir,—Several references have been made to my letter in the issue of January 8th; may I, therefore, be allotted space in the correspondence columns to attempt to clarify my viewpoint?

Many of your correspondents apparently wish to abolish free clinics in order to increase the prosperity of the practising veterinary surgeon. I maintain that this is the wrong approach, firstly because I do not believe that it is possible to accomplish and secondly because it would not—to any appreciable extent—increase the incomes of the veterinary surgeons in the districts concerned. It is a well-known fact that the income of a small-animal practice is affected to a far greater extent by the financial prosperity of the neighbourhood than by the number of animals or the incidence of animal ailments. If free clinics were no longer available, their frequenters would not transfer their patronage to private veterinary surgeons, but would seek less attention for their pets and some would cease to keep them.

In connection with advertising, by far the best publicity is personal recommendation and I doubt whether printed advertising would be of much value to the private practice. I agree, however, with many correspondents who have said that the Profession, as a body, should receive more publicity.

Free clinics conducted in accordance with the requirements of the 1948 Act offer a service to the community and not a very great menace to the Profession. No free clinic, in spite of its advertising, can offer the same standard of personal service as provided by the private practitioner and it is this which is so highly valued by the discerning public.

It is the duty of the individual members of our profession who are connected with free clinics to see that these are not abused and that the societies concerned do not in any way contravene the 1948 Act. In this way we can ensure that the free clinic is not in unfair competition with neighbouring private practices.

Yours faithfully,

W. M. TAYLOR,

15, Glendower Place,
London, S.W.7.

January 24th, 1955

GREEN YOLK EGGS

Sir,—With reference to the report by Messrs. Worden, Bunyan and Davies, on "The Production of Green Yolks," it would appear that the principal application of this work, from the general practitioner's standpoint, would be that if his breakfast egg was bad, he need not fear that it would smell.

Yours faithfully,

HARVEY M. F. MAYNALD,

95, Damers Road,
Dorchester, Dorset.

January 24th, 1955

SIXPENCE PER C.C.

Sir,—I am informed by the Ministry of Agriculture and Fisheries that the cost of S.19 vaccine to the farmer increased from 2s. to 2s. 6d. from January 1st.

I can only assume this is to cover the cost of the inextricable c.c. left in each of the new style vials.

Yours faithfully,

E. R. MILLER,

74, Exeter Road,
Exmouth.

January 20th, 1955

ERRATUM

In the letter published last week over the signatures of Messrs. Worden, Bunyan, & Davies, the symbol m was omitted from the formula in line four, and again in line 29. In both cases the appropriate portion of the text should have read $m\mu$ and not simply μ.